

Shared Services Server Operations

Virtualize In-Place Strategy

Recommendation to CAB - September 15, 2010

Executive Summary:

The State of Washington shared service teams have worked to identify opportunities for co-existence and co-operations in the new State Data Center. Involvement has included both technical and management levels of agency staff. As presented in the [June 11th CAB materials](#), the concept of agency containers (virtual data centers) and tiered levels of service were introduced as a method to transition to the multi-tenant environment of the new State Data Center (SDC). During this effort, a consistent question surfaces as agencies consider the initial Hosting Service Level for the new State Data Center (SDC): What can Agencies do today in preparation for a future consolidated infrastructure?

In response to this question, and in alignment with the June 11th recommendation to begin virtualization efforts now, the Shared Services Server Operations Planning Team has documented immediate activities to best position agencies for the planned consolidation into the SDC.

The activities recommended are meant to enable forward motion toward consolidation without policing or enforcement. By providing guidance the workgroup believes agencies will see the benefits and naturally focus on actively pursuing the consolidation strategy from the beginning.

The Unisys/Excipio report identified about 4,017 agency physical servers in Thurston County. Of these 62% had reached the end of their useful life and would ordinarily be replaced in 2010. By the end of 2010, 95% of the servers will have reached their end of life. This represents a server replacement cost of approximately \$32 million.

With such large replacement expenditures looming, the Shared Server Services workgroup encourages adoption of the recommended virtualize in-place strategy. Advancing the strategy now definitively moves the state toward a consolidated infrastructure in a cost effective way. The strategy also reduces risk and further positions the state for consolidation with better use of state resources.

This document outlines:

1. Basic assumptions based on industry research/agency feedback
2. Recommended actions to prepare for the future shared environment, and
3. Considerations for management that will encourage agencies to hold themselves accountable to a future consolidated infrastructure.

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Assumptions:

1. Significant virtualization opportunity exists within the State that is currently not in motion because funding, expertise or resources are not available.
2. Agencies, in the spirit of shared services and current budget constraints, will contribute expert resources to “centers of excellence” to move the State forward.
3. Virtualization experts already exist within State agencies.
4. When physical servers reach their end of useful life and are replaced, virtualization saves capital and reduces long term operating costs. For example:
Capital:
 - If the cost of one replacement server is \$3000
 - And the cost of a virtual host which can support 12 guest servers is \$12,000
 - Virtualizing 12 physical servers on 1 virtual host saves \$24,000 or 66% of capital cost.Operating:
 - An agency has 24 2U physical servers (one full rack of servers)
 - They virtualize the 24 physical servers and they now run on 2 – 2U virtual hosts
 - 2 physical virtual hosts of 2U each represent less than 10% of the power consumption / rack space needed / heat generated.
5. Virtualized agency environments will enable SDC consolidation.
 - As an example, moving an agency with 48 physical servers to the SDC vs. moving the same agency with 4 virtualized hosts requires 1/12 the labor.
 - Additionally, live migration of virtualized agency environments eliminates physical efforts to consolidate by electronically transferring data and systems to the SDC over the state network. This reduces migration cost, risk and user impact.

Recommendations:

1. Set a virtualization adoption goal of 85% of all Wintel servers prior to consolidating in the State Data Center. This will maximize operational savings in the long term.
2. Create a virtualization Center of Excellence (COE) staffed with existing agency virtualization “experts” dedicating as much time as needed to serve agency needs.
 - a. Virtualization COE team will meet weekly and document demand and opportunity; and report monthly to the Shared Services Planning team to validate progress.
 - b. CAB endorses the COE consulting service to technically enable agencies to virtualize their environments.
 - c. Pending voluntary agency consultation with the virtualization COE, a COE assessment document will accompany the agency’s request for virtualization hardware and software. The document will verify the feasibility of the proposed approach, align the project with related initiatives (like the Metropolitan Optical Network), and ensure that

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the implementation plan tailored to the agency's current environment will align with SDC consolidation in the future.

- d. Virtualization COE team participate as key design stakeholders of future State operated Shared Server environment at SDC and transitions to governance team for same service once provisioned.
3. COE virtualization principles include but are not limited to:
 - a. Offer vendor neutral expertise
 - b. Evaluate virtualization products
 - c. Align products to agency requirements
 - d. Share & develop expertise
 - e. Develop best practices
 - f. Act as an escalation level (tier 3) for agency problem resolution
 - g. Align virtualization effort with the enterprise SDC initiative

Considerations:

1. Participating in the described pre-virtualization strategy is voluntary. The expectation is that regardless of participation, agencies will be virtualized to their maximum potential when operating within the new SDC so that ongoing operational costs are minimized.
2. COE is not policing – they are lending credible and trusted expertise and experience to agencies to help them make well informed decisions around virtualization and assist in the process to achieve the desired virtual end state.
3. Strategy for new investment today (infrastructure hardware and software) should align with new SDC or secondary data center recovery.
4. Restrict new infrastructure expenditures at a Thurston county level to investments promoting virtualization and consolidation unless special circumstances warrant an exception.
5. Minimize external consultant contracts for virtualization expertise in light of expertise available via the COE.
6. Validate Microsoft SQL virtualization to achieve virtualization target. A large number of non-virtualized physical servers today are Microsoft SQL due to agency reservations about the success of virtualizing online transaction processing systems (OLTP).

Next Steps:

- Assemble COE with technical subject matter experts including security and finance.
- Identify agencies prepared to start.
- Have the COE work with the individual agencies to help set their virtualization strategy.
- Sign-up if you plan to refresh servers and work with the COE team.